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Arrangement for automatic leading and  
Press the turns in coils of an axial progressive winding for electrical equipments.

The invention refers to an arrangement to active leading and pressing of the turns hatchet coils of an axial progressive winding for electrical equipments, existing from axial and radial pressing elements acting on the respective turn, which over one fibertragungs mechanism including one across the whole the prolonged winding bank on slide bars or - slidable and backlash potential bottom by a pneumatic or hydraulic applied piston cylinder arrangement seemed supports held by the path and the acceleration inpress of the elements independent press pressure held is more bottom.

It is already apparatus to leading, rolling up and Anspresen wires when manufacturing windings known with at least two accumulating turn berSh renden Druckelement those from the outside applied contact pressure axial to winding pass on, and with at least radial on accumulating turn and it immediate adjacent turn pressing pusher member, whereby the pusher members in a common axial running along however support resting in circumferential direction are guided and whereby at least an axial acting pusher member the accumulating wire at a location detected, against which this already rests the adjacent, already rolled up wire, however even yet the turn document does not rest upon, during at least an other, axial acting Druckelement the accumulating already up turn document resting upon wire to springing back prevents, and whereby further the axial acting pusher members are more adjustable in the support in their cavern in relation to the turn document (DT-RS 1,281,030) dz around here a to a large extent constant contact pressure to presrollen also then to ensure, if discontinuities arise in the Windungsteilung, for example by solder joints or insertion of spacer strips between the turns, are there other already known to connect the axial acting pusher members by a strength-transferring lever system with a cylinder filled exhibiting a plunger with compressed gas and to attach the cylinder space to a regulator for the compressed gas and to a pressure balance container (DT-PS 1,302,282).

With this arrangement the pressure in the pressure cylinder affects the plunger, which is by a mechanical Kraftübertragungssystem with the pressing elements connected. Since the pressure cylinder is very many smaller in its linear extension than the winding, the entire is guidance, winding and pressing arrangement on a set up separated of the winding bank support housed, which is provided for example with a rough feed control, which is the feed of the support approximately additional with fiberholantrieb an equipped, controlled over a variable-speed gear with drive spindle effected and, of the pressure cylinder over limit switches, with it continuous works of the arrangement gewahrleistet with it can however an undesired space requirement for the support and adverse effort for the control of the feed connected be. (Smaller space requirement and a simpler control become achieved by the fact that the pressing elements with two to each other and in their longitudinal axial pressure cylinders connected parallel to the feed direction of the arrangement are, whose plunger works against each other that furthermore both plungers are more detectable outside of the winding arrangement and that further both pressure cylinders are simultaneous applied with pressure.

▲ top

Here the plungers of the pressure cylinders with brakes are connected, which are more detectable on to the guide of the arrangement serving feed bars alternate (DT-OS 1,639,316).

With this arrangement two contradicting requirements arise themselves: one partly the pressing elements the supporting main support is to seem also with tilting Kraftangriff auf the Führungstangen or - proper and mōw. leicht reibunostos to slide can, which eiordert a lubrication, on the other hand one must the step brakes on the same Führungstangen and/or - seem also with very large. Contact pressures, which correspond to the required short-circuit strengtheningnnges, unverrückbar clampable its, which forbids a lubrication. Due to the whole length constant friction conditions, caused also by a certain wear during the operation, not over, did not leave itself constant contact pressure over the whole length of the winding upright obtained.

Object of the invention is it to indicate an arrangement with which that the pressing elements supporting support on lubricated guide bars and/or. - seemed to slide easy with smallest friction can and by a piston cylinder arrangement a to a large extent konstanter contact pressure upright obtained separated of it becomes.

This object becomes according to invention dissolved by the fact that fibertragung the forces between the piston cylinder arrangement and that the pressing elements end to supporting support by means of circulation chain or such, made and that the Folbenzlin is that arrangement at a END range of the winding bank disposed and that furthermore an apparatus is provided, which makes with the unintentional lifting of the pressing elements the axial feed pressure inoperative.

Since continuous upright obtained with this arrangement the contact pressure becomes over the whole length of the winding, in case of the lifting or gliding the pressing elements of the turn the support with large force up to the Sndanschlag would shoot, whereby not only the entire plant damaged, but also people in risk brought could become.

Therefore it is indispensable with such an arrangement that becomes prevented by a safety device this shooting of the support. This can e.g. via an Übertragungsmechanismus the engaging brake or a clutch interrupting the power transmission take place.

The release of the brake and/or. the clutch can via an electrical switch mounted at the pressing elements take place, that when way remaining the contact pressure, for example due to an incorporated small spring travel, operated becomes.

For example the brake can be kept open by an electromagnet, which becomes energized over a quiescent current switch at the pressing elements, in the operation, acting against spring forces. There is however just as good arrangements with working current switches, for example with application of an electromagnetic releasable clutch, in the towering above mechanism more conceivable. If a clutch becomes provided, then it must be ensured however by other suitable means that for the clutch the elements remaining with open bottom tension for their part do not through-shoot. That can e.g. via inlets of a backpressure into the piston cylinder arrangement take place, possibly. also a shock absorber-like Strömlingsdrossel on that can meet the pressure connection of opposite side of the pressure cylinder, those the rate of the Supportes limited freed of the resistance.

The location of the here described electrical and electromagnetic feeling and actuators natural organs used pneumatic also hydraulic with same effect or can become.

An essential reduction of the dimensions of the Gesamtan order is achievable, if the stroke in the piston cylinder arrangement only a fraction of the length of the winding amounts to and is into the transmission mechanism a corresponding bottom setting incorporated, for example a Untersetzungsge floated between Kettenumlenkrolle and Kolben-Zylinderanordnung<sup>3</sup>. The piston cylinder arrangement can be then also with their longitudinal axis in a large angle to vertical to the axis two winding bank at its end region disposed. On the basis the aiiiaenen Zei designs become an embodiment: the invention and their itirungsweise explained.

Fig. 1 shows the inventive arrangement at coils a bank with started winding.

Fig. 2 exemplarily details security of switch bottom reference shows to Fig.1 becomes first the impact stated: The pressing head 1 with the radial and axial acting pressing roles of 2 and 3 becomes applied at the beginning of the layer which can be wound to the conductor in more radial and axial alignment. The radial pressurization of the pressing head 1 over Dloekzylinder 4 becomes by means of pressure regulator set, it: with the fact ensured is that with bobbin out of round the horizontal roller inpresskopfes liner on the conductor which can be rolled up rests upon. The axial pressurization over the pressure cylinder 5 is variable over the pressure regulator 6 more adjustable. The height of the contact pressure which can be adjusted small let itself after the bare turn-high and the number some cell pus. Leg coils of the layer continues to press the accumulating conductor corresponding its upward gradient the pressing head axial against the lining up pressure and affects over on the Füh rungstangen 11 slidable support 12 and the circumferential with inpresskopf the coupled chain 7 the pressure cylinder 5, in which the contact pressure becomes over the pressure regulator 6 the corresponding adjustment constant held. If the bobbin is finished wound, the Bnpressergüst is swung out around approximately 150 by means of both at the ends of the winding bank mounted hydraulic cylinder 8. Then the bobbin with the Rollenkran can be stretched from above. In order to find with different Bpuldendurehessern the most favorable point of pressing, which immediate before the radial contact of the conductor lies on the support, the stand can become corresponding stepless pivoted.

If the pressing head from possibly which reasons against the bobbin stands out, the electric circuit becomes the magnetic brake is interrupted, this closes by mounted the according to invention RoXienendschalter 9 and the support becomes held, so that it cannot shoot due to the pressure in the cylinder 5 against the stop. The magnetic brake lo forms in the example an assembly with a reduction gear, which makes it for possible, the length of the pressure cylinder 5 significant small to select as if the length of the winding bank and thus the path of the support is. As in Fig. more recognizable, the pressure cylinder 5 is so housed above the drive and control box of the winding bank that it can disturb or prevent in no manner. In the example a limit switch provided with a special radial roller tappet 11 is shown.

Just as well also the radial pressing role 3 can by inserting a small fit with springs-strains into the Pressweg seizing to take off the used to become.

Fig. the exemplary formation of the roller tappet 13 and its cooperation with the quiescent current limit switch 9 show 2. If the roller 13 stands out against the winding, a made relief of the zusasagedrflickten spring 14 and the switch role of 15 is squeezed out for the groove reason of 16 of the connecting rod 17 by the Wellenbund 18, the pin of the quiescent current switch 9 is imprinted and the quiescent current-interrupted.

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